

No. 2 sample was collected from oil which formed after the pool had been cleaned out, and heavy rains had caused an overflow which carried off any oil that had been subjected to burning. The different conditions existing when the two samples were taken probably accounts for a difference of viscosity in the two samples, and for the percentage of light oils being lower in No. 1 sample than in No. 2 sample.

The analyses are submitted below, and with them for comparison are given the analyses of a sample of oil from New Plymouth taken in 1906, and a sample from Kotuku, Greymouth, taken in 1906:—

	From Main Oil-springs at Head of Te Hau-o-te-Atua Stream.				New Plymouth Oil.		Kotuku Oil.	
	No. 1.		No. 2.		Per Cent.	Specific Gravity.	Per Cent.	Specific Gravity.
	Per Cent.	Specific Gravity.	Per Cent.	Specific Gravity.				
Water...	Nil	...	Nil	...	Nil	...	Nil	...
Petroleum-spirit (benzene), distilling below 150°	Nil	...	Nil	...	20.2	0.7601	4.1	0.7954
Kerosene or burning-oil, distilling between 150° and 300°	25.2	0.842	47.2	0.836	42.8	0.8351	42.4	0.8443
Lubricating-oil, distilling above 300°	71.8	...	51.7	...	22.1	...	47.8	0.9024
Paraffin ...	3.0	...	1.1	...	10.3	...	Nil	...
Pitch ...	Nil	...	Nil	...	4.6	...	5.2	...
Loss ...	Nil	...	Nil	...	Nil	...	0.5	...
	100.0	...	100.0	...	100.0	...	100.0	...
Specific gravity of crude oil ...	...	0.900	...	0.877	...	...	...	...

Since the conditions under which sample No. 2 was taken were the more favourable, it probably is a more representative sample. When compared with the oils of New Plymouth and of Kotuku it will be noticed from the analyses that it does not contain benzene as they do, but a higher percentage of kerosene and much higher percentage of lubricating-oil. The paraffin percentage is, however, much lower than that of the New Plymouth oil.

Utility of Clays for Brickmaking.—As the work progresses in the subdivision attention is being given to the possibility of using some of the clays which occur in the area for the purpose of brickmaking. Our investigations have not proceeded sufficiently far to state anything definite on the subject. Good plastic clays, however, do occur, and at the same time contain but a small percentage of lime, so that there is every possibility that a valuable economic deposit exists.

Cement.—On account of the large extent of the deposit of siliceous chalky limestone, which has been referred to under general geology, an analysis of it was made with a view of ascertaining its value for cement-making. The following is the result of the analysis:—

	Per Cent.
Silica (SiO ₂) ...	11.55
Alumina (Al ₂ O ₃) ...	2.81
Ferric oxide (Fe ₂ O ₃) ...	1.28
Lime (CaO) ...	45.56
Magnesia (MgO) ...	0.50
Carbonic oxide (CO ₂) ...	35.80
Water (H ₂ O) ...	1.60
Undetermined ...	0.90
	100.00

From this analysis it will be seen that the limestone contains 81.36 per cent. of carbonate of lime, and, though the percentage of silica is high, the rock may prove useful for cement-making. One great drawback, however, to its economic value is the fact that coal for burning has not yet been discovered in the area, and the cost of burning the limestone is necessarily greatly increased.

Concluding Remarks.

With regard to the location of a suitable site for a borehole in this area, one very important factor must be taken into consideration—that is, whether the petroleum-bearing formation belongs to, or is conformable with, the formations which are exposed at the surface, and the anticlines which it is possible to locate.

If the petroleum is derived from a formation not exposed and unconformable with the surface formations, and has reached the surface by rising up fault-planes or breaks, it is doubtful whether the flexures of the upper beds will correspond with those of the lower beds, and therefore